

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Helmut PEISE et al.

Serial No.: 10/815,192

Filed: March 31, 2004

For: Apparatus for Gasification of Combustion and  
Waste Materials Containing Carbon and Ash

Examiner: Kennedy, J.

Group Art: 1764

Mail Stop **Appeal Brief - Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**APPEAL BRIEF**

SIR:

This is an appeal, pursuant to 37 C.F.R. § 41.37 from the decision of the Examiner in the above-identified application, as set forth in the Final Office Action wherein the Examiner finally rejected appellant's claims. The rejected claims are reproduced in the Appendix A attached hereto. A Notice of Appeal was filed on April 7, 2009.

The fee of \$540.00 for filing an Appeal Brief pursuant to 37 C.F.R. § 41.20 may be charged to our Patent and Trademark Office Deposit Account No. 03-2412. Appellants request a one-month Extension of Time of the original shortened statutory response period to file this Appeal Brief. A Petition for the one-month extension of time is enclosed herewith. The fee of \$130.00 for

the one-month Extension of Time may be charged to our Patent and Trademark Office Deposit Account No. 03-2412. Any additional fees or charges in connection with this application may also be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

#### **REAL PARTY IN INTEREST**

Siemens AG, located in Munich, Germany, is the real party of interest in the above-identified U.S. Patent Application.

#### **RELATED APPEALS AND INTERFERENCES**

There are no other appeals and/or interferences related to the above-identified application at the present time.

#### **STATUS OF CLAIMS**

Claims 1-7 have been rejected. Claims 1-7 are on appeal.

#### **STATUS OF AMENDMENTS**

A response to the final Office Action, which did not amend the claims, was filed on March 9, 2009. In an Advisory Action mailed March 13, 2009, the Examiner indicated that the response was considered and that the response did NOT place the application in condition for allowance.

## SUMMARY OF THE CLAIMED SUBJECT MATTER

In the following summary, references are made to U.S. Patent 5,968,212, of which this application is a reissue application. Appellants' invention is directed to an "entrained-flow gasification reactor for gasification of combustion, residual and waste materials containing carbon and ash using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic parts of said combustion, residual and waste materials" (col. 1, lines 8-15) "at a pressure between ambient pressure and 60 bar" (col. 2, lines 29-31).

Independent claim 1 recites an "entrained-flow gasification reaction chamber" (reaction chamber 2; col. 3, lines 18-20; Fig. 1); "a refractory-grade lining configured to form a first, upper part of said reaction chamber" (lining 3; col. 3, lines 22-23, and Fig. 1); and "a cooling wall configured to form a second, lower part of said reaction chamber" (cooling wall system 4; col. 3, lines 28-31; Fig. 1). The "second part of said reaction chamber including a lower floor and a lower outlet opening (col. 3, lines 32-34; Fig. 1), said cooling wall including cooling coils (outlet cooling means 6; col. 3, lines 61-63; Fig. 1). The cooling coils are "connected in a gas-tight manner, said cooling coils being coated with a heat-conducting ceramic layer and operated, while being cooled by pressurized water, below or above the boiling point of the cooling water" (col. 2, lines 43-49). The "refractory-grade lining extending downward in a direction parallel to sidewalls of said reactor chamber over said cooling wall in an area of said second part of said reaction chamber including an area of said lower floor, such that said refractory-grade lining and said cooling wall are joined in an overlapping fashion to compensate for different heat expansions" (col. 2, lines 56-59; Fig. 1).

## GROUND OF REJECTION TO BE REVIEWED IN APPEAL

1. Whether claims 1-7 are broadened under 35 U.S.C. §251 in a reissue application outside the two-year statutory period.

2. Whether claims 1-7 are patentable under 35 U.S.C. §103 over U.S. Patent No. 5,464,592 (Booker) in view of U.S. Patent No. 4,188,915 (Kummel)?

## ARGUMENT

### 1. Rejection under 35 U.S.C. 251

The present reissue application was filed to correct a translation error in U.S. Patent No. 5,968,212. More specifically, the German term “Flugstromvergaser” was incorrectly translated as “fluidized-bed reactor” and should have been translated as --entrained-flow gasification reactor--. Translation errors are clearly an error of fact that is correctable by reissue as held in *In re Oda*<sup>1</sup>.

The Examiner contends that replacing “fluidized-bed reactor” with --entrained-flow gasification reactor-- broadens the claims. The Court of Appeals for the Federal Circuit (CAFC) in *Forest v. Ivex*<sup>2</sup> states that comparison of the scope of the reissue claims with the claims of the original patent is a matter of claim constructions, and it is performed from the perspective of one having ordinary skill in the art. In *Philips v. AWH Corp.*<sup>3</sup> the CAFC states “the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification”. In *Forest v. Ivex*, the CAFC found that a claim corrected to recite a method of converting (-)-diol intermediate, rather than (+)- diol intermediate, was not improperly broadened because the

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<sup>1</sup> 443 F.2d 1200, 170 USPQ 268 (CCPA 1971)

<sup>2</sup> 501 F.3d 1263, 84 USPQ2d 1099, 1105 (Fed. Cir. 2007)

<sup>3</sup> 415 F.3d 1303, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005), cert-denied, 126 S. Ct. 1332 (2006)

specification made it clear that (-)-diol was used and because a person of ordinary skill in the art reviewing the patent would find the error in the claim to be immediately apparent.

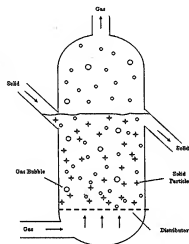
The correction made by the present application is analogous to the correction made in *Forest v. Ivex* in that the specification of the present application discloses the correct term and in that the error would be immediately apparent to one skilled in the art reviewing the patent.

In rejecting the claims under 35 U.S.C. 251 in the present application, the Examiner relies on the declaration of Dr. Manfred Schingnitz (filed on April 15, 2008), which explains differences between entrained-flow and fluidized bed gasification. However, Dr. Schingnitz's declaration further explains that because of these differences between the two gasifier types, one skilled in the art would appreciate that the gasifier referred to by U.S. Patent No. 5,968,212 can not be considered to be a fluidized-bed reactor and can only be considered to be an entrained-flow gasification reactor. Thus, a person skilled in the art reviewing U.S. patent 5,968,212 would find the error in the term "fluidized-bed reactor" in the claims to be immediately apparent. As previously established, the original specification clearly discloses an entrained flow gasification reactor.

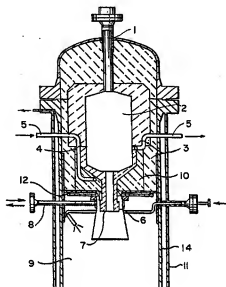
The drawings below illustrate the differences between the fluidized bed reactor and the entrained flow reactor. The drawing on the left below is a fluidized bed reactor from the articles entitled "Fluidized bed reactor" on Wikipedia.org. As stated in Dr. Schingnitz's declaration, fluidized bed reactors introduce a gas through a bed of solid particles. The fluid or gas enters from the bottom of the reactor through the bed of solid particles to suspend the solids in the reactor. Furthermore, the mixture of the solids and gas causes the solid particles to behave as though the solid particles were a fluid.

The drawing on the right below is a portion of Fig. 1 of the present application. In entrained flow gasification, the combustion or waste materials comprise fine particles suspended in a

gasifying agent medium. The combined suspended particles and gas enter through the top of the reactor. Based on the structural differences between the two type of reactors, those skilled in the art of gasification would appreciate that the gasification reactor show in Fig.1, 2, and 3 of the present application could only be considered to be an entrained flow gasifier.



fluidized bed



entrained flow

As stated above, the correction made by the present application is analogous to the correction made in *Forest v. Ivex* in that the specification of the present application discloses the correct term and in that the error would be immediately apparent to one skilled in the art reviewing the patent. Thus, it follows that the replacement of the incorrect term "fluidized-bed reactor" with -- entrained flow gasification-- does not constitute a broadening of the original claim, but merely a correction of the claim to be consistent with the original specification. Accordingly, the rejection under 35 U.S.C. §251 should be withdrawn.

2. Rejections under 35 U.S.C. §103

Claims 1-7 stand rejected under 35 U.S.C. §103 as unpatentable over U.S. Patent No. 5,464,592 (Booker) in view of U.S. Patent No. 4,188,915 (Kummel).

Independent claim 1 relates to an entrained-flow gasification reactor and recites "a refractory-grade lining configured to form a first, upper part of said reaction chamber", "a cooling wall configured to form a second, lower part of said reaction chamber, said second part of said reaction chamber including a lower floor and a lower outlet opening, said cooling wall including cooling coils connected in a gas-tight manner", and "said refractory-grade lining extending downward in a direction parallel to sidewalls of said reactor chamber over said cooling wall in an area of said second part of said reaction chamber including an area of said lower floor, such that said refractory-grade lining and said cooling wall are joined in an overlapping fashion to compensate for different heat expansions".

Brooker fails to disclose, teach or suggest the latter limitation because Brooker fails to disclose a refractory grade lining that extends over the throat section 31 (which the Examiner considers to be the cooling wall) "in a direction parallel to the sidewalls of said reactor chamber" ... "such that said refractory-grade lining and said cooling wall are joined in an overlapping fashion to compensate for different heat expansions".

Brooker is directed to a gasifier throat structure that includes a cooling system. According to Brooker, a gasifier 10 has an elongated shell 11 with a refractory liner 12 which forms a combustion chamber 13 (see col. 2, lines 11-15; and Fig. 1 of Brooker). A burner 14 is disposed at an upper end of the gasifier (col. 2, line 17-10). The lower end of the gasifier shell 11 includes a floor 19, which is a continuation of the shell and has a conical shape with a constricted throat opening 21 (col. 2, lines 25-32). The throat section 31 of the gasifier is a

continuation of the gasifier floor 19 and refractory lining 22 (col. 2, lines 53-55). The throat section 31 also includes a framework of conductors or pipes 32 which are connected to a manifold 36 (col. 2, lines 62-67).

The Examiner considers the refractory grade lining 12 of Brooker to be the claimed "refractory lining" and the Examiner further considers the throat section 31 of Brooker to be the claimed "cooling wall". The throat section 31 is described in Booker as a continuation of the gasifier floor 19 refractory liner 22. Since the throat section 31 is a continuation of the refractory liner 22, the refractory lining 12 and throat section 31 of Brooker do not disclose, teach, or suggest "said refractory-grade lining extending downward in a direction parallel to sidewalls of said reactor chamber over said cooling wall in an area of said second part of said reaction chamber including an area of said lower floor, such that said refractory-grade lining and said cooling wall are joined in an overlapping fashion to compensate for different heat expansions", as expressly recited in independent claim 1.

Kummel fails to teach or suggest what Brooke lacks. Kummel discloses a wall of a gasifier having integral cooling tubes. Kummel fails to teach or separate refractory lining overlapping a cooling wall. Accordingly, independent claim 1 is allowable over Brooker in view of Kummel. Dependent claims 2-7 are allowable for the same reasons as is independent claim 1, as well as for the additional recitations contained therein.

For the foregoing reasons, it is respectfully submitted that the combined teachings of Booker and Kummel fail to establish a *prima facie* case of obviousness with regard to the subject matter recited in claims 1-7. The Final Rejection of the claims under 35 U.S.C. §103 should be reversed.



**CONCLUSION**

For the foregoing reasons, it is respectfully submitted that appellants' claims are patentable over the art of record, and the Examiner's rejections should be reversed.

Respectfully submitted,  
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Dated: July 7, 2009

## CLAIMS APPENDIX

1. A entrained-flow gasification reactor for gasification of combustion, residual and waste materials containing carbon and ash using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic parts of said combustion, residual and waste materials at a pressure between ambient pressure and 60 bar, comprising:

a entrained-flow gasification reaction chamber;

a refractory-grade lining configured to form a first, upper part of said reaction chamber; and

a cooling wall configured to form a second, lower part of said reaction chamber, said second part of said reaction chamber including a lower floor and a lower outlet opening, said cooling wall including cooling coils connected in a gas-tight manner, said cooling coils being coated with a heat-conducting ceramic layer and operated, while being cooled by pressurized water, below or above the boiling point of the cooling water, said refractory-grade lining extending downward in a direction parallel to sidewalls of said reactor chamber over said cooling wall in an area of said second part of said reaction chamber including an area of said lower floor, such that said refractory-grade lining and said cooling wall are joined in an overlapping fashion to compensate for different heat expansions.

2. The entrained-flow gasification reactor of claim 1, wherein said reactor is operated at a pressure between ambient pressure and 30 bar.

3. The entrained-flow gasification reactor of claim 1, wherein said cooling wall of said reaction chamber comprises a double-mantle design with a cooling space.

4. The entrained-flow gasification reactor of claim 1, wherein said second part of said reaction chamber includes a lower floor and a lower outlet opening.

5. The entrained-flow gasification reactor of claim 4, wherein said cooling wall of said reaction chamber is limited to said lower outlet opening.

6. The entrained-flow gasification reactor of claim 4, further comprising a cylindrical mantle surrounding said reaction chamber, and cooling means to cool said lower floor and said lower outlet opening of said reaction chamber, said cooling means being connected in series or in parallel with said cylindrical mantle.

7. The entrained-flow gasification reactor of claim 1, wherein said first part and said second part of said reaction chamber are the upper part and the lower part, respectively, of said reaction chamber.

## EVIDENCE APPENDIX

1. Declaration of Dr. Manfred Schingnitz

Attorney Docket # 479701-39RE

PATENT

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Serial No.: 10/815,192

Filed: March 31, 2004

For: Apparatus for Gasification of Combustion and  
Waste Materials Containing Carbon and AshCommissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**DECLARATION OF DR. MANFRED SCHINGNITZ**

DR. MANFRED SCHINGNITZ hereby declares and states:

1. I am an inventor of the above-identified reissue patent application for an apparatus for gasification of combustion and waste materials containing carbon and ash.
2. This declaration is submitted to provide support for the assertion that one skilled in the art of gasification would realize that the term "fluidized-bed reactor" in U.S. Patent No. 5,968,212 is incorrect because that the reactor shown in the drawings filed with the original application 08/954,361, which issued as U.S. Patent No. 5,968,212, and the accompanying description unequivocally disclose an entrained-flow gasification reactor which can not be considered to be a fluidized-bed reactor.

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3. Processes employed for gasification of combustion and waste materials are divided into three categories:

- (i) fixed-bed gasification;
- (ii) fluidized-bed gasification; and
- (iii) entrained-flow gasification.

4. In fixed-bed gasification, a bed of solid combustion or waste material pieces is supported on a grate and a fluid, i.e., a gas, flows around the coal pieces.

5. In fluidized-bed reactors, a fluid is passed through a bed of granular solids including the combustion or waste material. Once the velocity of the fluid passes a minimum velocity, incipient fluidization occurs in which the force of the fluid balances the weight of the granular solids. Once the fluid velocity surpasses the minimum velocity, the bed of granular solids become agitated and behaves as though it were a fluid. Thus, the bed in the reactor becomes a fluidized bed.

6. In an entrained-flow gasification reactor, the combustion or waste material to be gasified comprises fine particles that are suspended in a gasifying agent medium in the reactor, such that the gasification occurs in a cloud of fine particles.

7. The reactor shown in Figs. 1, 2, and 3 of the above-identified reissue application fails to disclose any structure that would support a bed of granular solids as required by a fluidized-bed reactor. Accordingly, one skilled in the art of gasification apparatus would appreciate that the terms "fluidized gasification", "fluidized reactor",

"fixed bed reactor", and/or fluidized-bed reactor" do not describe the reactor shown in the Figs. 1, 2, and 3.

8. Furthermore, one skilled in the art would appreciate that the gasification reactor shown in Figs. 1, 2, and 3 of the above-identified reissue application can only be considered to be an entrained flow gasifier because:

(i) the pressure and temperature operating characteristics disclosed at col. 3, lines 22 of the U.S. Patent No. 5,968,212 apply only to entrained flow gasification; and

(ii) the structure of the reactor prohibits the existence of a bed of solids.

9. In view of the above, the replacement of the term "fluidized-bed reactor" with ~~entrained flow gasification reactor~~ is supported in the original specification.

10. I declare that all statements made herein of my own knowledge are true; that all statements made herein on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful statements may jeopardize the validity of this patent application and any patent resulting therefrom.

Date: 10.04.08

By:   
Dr. Manfred Schlingnitz

RELATED PROCEEDINGS APPENDIX

None